

The infrastructure could be financed by public or private funds or by some combination thereof, but we also need to examine what role local rural assets could play and how the cooperation of public institutions could be brought to bear on financing.

Keywords

construction of an ecofriendly regional transportation infrastructure, introduction of new means of transportation, transportation problems of cities that are tourist destinations, Jeju's traffic problems, self-driving electric vehicles, building infrastructure for the intelligent transport systems of the future, rail transport, maglev(magnetic levitation) trains, bus rapid transit(BRT), monorail, systems of public transportation, carbon-free island, agreement between the provincial government and the people



Policy Implications

- In view of the expectation that traffic congestion will continue to worsen with the increase in the number of both permanent residents and tourists, we have to study ways of building better, ecofriendly transportation infrastructure in order to raise capacity for receiving tourists.
- We also need to look into turning the transportation system itself into a tourist attraction by making optimum use of special characteristics of Jeju as a world class pristine tourist destination in addition to more ordinary enhancements such as introducing new means of transport and adjusting costs.
- We need to analyze the introduction and operation of light rail transit systems in Gimhae and Yongin, which have been running in the red, and in Daegu, which is a success story, and apply what we learn to our own transit systems. Building ecofriendly transportation infrastructure requires tremendous financial resources and as such, the need for an intra-regional transport system must be acknowledged and governmental policy support provided.

Direction of Creating Smart City in Jeju



Chair	BYUN Byung Seol Professor, Inha University
Keynote Speaker	HWANG Kyung Soo Professor, Jeju National University
Discussant	KIM Tae Kyung Senior Researcher, Gyeonggi Research Institute
	MOON Youngjun Chief Director, Korea Transport Institute
	SUH Kyo Professor, Seoul National University
	CHUNG Chae Gun President, United Nations Project Office on Governance
	CHOI Jeong Seok Professor, Joongbu University
Rapporteur	YUN Wonsu Research Fellow, Jeju Research Institute

HWANG Kyung Soo A smart city is a futuristic high-tech city which marks the culmination of industry convergence based on Information & Communication Technology(ICT). The smart city is a new concept city, where the quality and efficiency of life can be maximized for residents through the organic connection of functions ranging from social infrastructure such as the environment, transportation, utilities and construction industries to home appliances such as electric bulbs. Jeju Special Self-Governing Province(Jeju Province) prioritizes improving the quality of life for local residents and tourists and overcoming the geographical limitations inherent to an island.

U-city is a short for ubiquitous city. The U-city represents a 21st century model for Korean cities, one which can revolutionize basic urban functions by converging urban spaces with high-tech ICT infrastructure and ubiquitous information services to make urban life more convenient, increase the quality of life, ensure safety through systematic urban management, improve the welfare of citizens

and create new industries. In contrast, leveraging ICT technologies and various convergence technologies, a smart city is networked in such a manner that enables mutual exchange of information between people-to-people, people-to-things, and city-to-city. A smart city aims to achieve sustainability, economic feasibility and a higher quality of life. The U-city and smart city are similar in that they are futuristic cities based on cutting edge ICT. However, a U-city focuses on the completeness of a city through ubiquitous technologies, whereas a smart city places a greater focus on cloud computing and big data analytics and information security. This has emerged as a key part of ICT with growing interest in sustainability through connectivity and eco-friendliness. The U.S. concentrates on the creation of smart grids and improving information accessibility to beef up smart infrastructure. In Europe, many experimental projects are underway to improve the quality of life and satisfaction with housing. Japan is building energy management systems to improve energy management technologies and supply new sources

of renewable energy. Developing countries such as China, South Africa, the Philippines and Vietnam are focusing on creating jobs and establishing various environmental and city management/control systems based on high-tech information technologies in order to manage smart cities, stimulate the economy and preserve the environment. Partnerships between the private and public play a key role in the smart city for advanced economies as well as developing ones. Specifically, the public or the government takes on smart city initiatives, which serve as frameworks that reflect creative ideas from private companies or citizens.

Jeju Province was nominated for the 2016 Smart City Asia Pacific Awards(SCAPA), which recognizes the most outstanding smart city projects in the Asian Pacific region. Among Korean cities, Sejong City was nominated in the smart buildings and education categories and Jeju Province was nominated in the smart grid category. The U-Eco City in Cheongna, Incheon was named the winner in the smart administration system category, while Gwangju's U-Tourpia was nominated in the smart tourism category along with Shanghai, China and Tasmania, Australia.

Jeju Province is undertaking many projects in this regard. First, the creation of a smart city through energy policies(solar photovoltaic and wind power) tailored to the province. The Carbon Free Island project has been underway as part of energy policies to meet climate changes and transform Jeju Province into a leader of a new industrial revolution. Second, there is a trilateral partnership between local authorities, private companies and civic organizations in response to climate change, which is summed up as practical governance in global cooperation. Third, the completion of a mechanism that encompasses traffic solutions, environmental protections and energy production by means of the deployment of electric vehicles. Fourth, the creation of a smart tourism island. In partnerships with Jeju Province, KT Group is set to provide telecommunication services based on GiGA infrastructure such as Gigabit Wi-Fi, GIGA

Internet and GiGA beacon. The province is establishing a smart tourism platform in partnerships with BC Card and KT Hitel. The Geographic Information System(GIS)based smart tourism platform facilitates the establishment of tourism policies through big data analytics regarding tourist spending patterns.

Principles for a Jeju style smart city have been proposed. The creation is expected to play a key role in the future direction of smart cities in Korea. As such, it is necessary to set out principles for the creation of a Jeju style smart city and make them applicable nationwide. First, a smart energy city should have a minimal impact on nature. A smart city should source its energy from nature, reduce carbon emissions and pursue energy policies in a way that minimize its environmental impact. Second, a smart city should contribute to protecting nature, which is a shared asset. It should minimize its spatial expansion and create an environment where people, the market economy and culture and art can flourish. Third, traffic in a smart city prioritizes the safety of people. A smart city has an environment friendly, people-centric transportation system. Fourth, a smart city has an engaging, democratic, educational and visionary leadership. This leadership model is based on integration, initiative, tolerance and harmony by combining educational and visionary leadership proposed by Frans Vreeswijk, General Secretary of International Electrotechnical Commission(IEC) and engaging, democratic leadership proposed by Won Hee-ryong, governor of Jeju Province. Fifth, a smart city should be designed to protect the safety of citizens and prevent disasters. Now is time to make use of smart devices to build a system to ensure public safety and disaster prevention.

The following policies have been proposed to make a Jeju style smart city successful. First, it is necessary to define a Jeju style smart city as a city that prioritizes humans and nature and widely declare it as such. A smart city prioritizes safety over efficiency and speed, and places humanity before science. It is necessary to emphasize that a smart city has creativity as its greatest strength, which is

a key differentiating factor from a U-city. Second, it is proposed that Jeju Province should host the communication center for smart cities around the world. Jeju Province should serve as a center and a model for smart cities by integrating research functions, policy proposals, discussions and exchanges of information. Third, a master plan for a Jeju style smart city should be developed to put ongoing projects: the Global Eco Platform, Carbon Free Island, Innovation Center for Creative Economy, electric vehicles, solar and wind power generation into context. Fourth, bylaws should be established and managed for the development and execution of smart city plans and related support. In addition, it is necessary to designate a division whose primary responsibility is for smart city projects. Fifth, smartphone applications should be widely distributed as part of open platforms which allow access to various systems for the creation of a smart city. Sixth, systems should be enhanced with a greater focus on security issues, as the smartest city becomes a gigantic ICT system, where various facilities and personal devices exchange data and therefore is vulnerable to new types of crimes and social ills. A security system which can predict and prevent such problems is of utmost importance. Seventh, a smart city is a city which is interested in data infrastructure as much as in facility infrastructure. As such, a smart city should be created in a way that facilitates data-processing solutions.

— **MOON Youngjun** Connectivity is the building block of a smart city, as mobile is enhancing connectivity between people-to-people, people-to-things, and things-to-things. At the current stage, it is difficult to turn the smart city into a business model. Smart vision requires overall changes in the current administrative system and the composition of service areas. Autonomous driving vehicles are setting a new trend in the transportation area. Jeju Province needs to use electric vehicles to deliver the sharing economy and automated driving vehicles in public transportation.

— **SUH Kyo** ICT is an approach to a smart city and will likely take us closer to smart cities. An ordinary

city would address traffic congestion by expanding roads, whereas a smart city would tackle traffic problems by way of traffic flow controls and ride sharing based on data. New security technologies should be reviewed, and as big data may be at risk of a large scale leak. It is necessary to analyze risk factors and develop response plans according to risk scenarios.

— **CHUNG Chae Gun** The UN has set sustainable development as an agenda for 2030. E-government has made government more accessible to all, and the smart city is seeing growing expectations as a way to make life more convenient for people from every walk of life. On the way to the establishment of smart cities, the introduction of new technologies may put some people at a disadvantageous position. Policies should be devised to protect the underprivileged and create and sustain the community.

— **CHOI Jeong Seok** South Korea is facing a shrinking population, a greying society and the risks of disasters. Urban maintenance and management calls for a new direction, highlighting the importance of smart cities. Smart city technologies are applicable to everyday life with the application and commercialization technologies taking center stage. Jeju Island is geographically well positioned to undertake such a pilot project. Developing and implementing locally tailored technologies is needed. In addition, Jeju Province is an ideal place to realize a smart city. It is necessary to shift focus from technological development to governance and a human-centric outlook.



Policy Implications

- Jeju has done more soul searching about smart cities than any other city. The basic concept and implementation plans for a Jeju style smart city are under development. A talent pool and institutional frameworks are being formed and cooperation is needed in various areas such as budgeting, public awareness and policy execution.
- In the future, Korea should establish a Jeju style smart city as a globally applicable business model.